THE RADICAL TREATMENT OF GENITO-URINARY TUBERCULOSIS.*

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The very beginning of tubercle in the genital or urinary tract is not altogether a matter of speculation. The bacilli may find entrance either along the natural passages or the infection may be an haemotogenous one.

Both in the epididymis and in the testicle tuberculosis often begins with a symptomatic hydrocele.[1] The infection starts in the epithelium and in the walls of the seminal ducts as small gray-white nodules. These coalesce and form large cheesy deposits which often break down and become abscesses. Later these find vent through the skin of the scrotum. In the testicle itself the miliary form is the rule. Large nodules often develop from the coalescence of small ones, but abscess forms only at a very much later stage. Simmond's [2] describes a very early form of seminal vesicle tuberculosis. He reports 15 cases in which tubercle bacilli were found in the spermatic fluid. Apparently these cases showed a very early catarrhal infection of the vesical mucous membrane without other evidences of disease. Only a very careful search with the microscope can reveal such cases. Symptoms are slight and not noticeable. The patient usually does not apply for examination until some definite symptoms call his attention to his condition. Consequently, the infection has obtained a firm hold before he comes to the surgeon.

Teutschlaender [3] reports 57 cases of Uro-Genital Tuberculosis in which 31 had involvement of the seminal vesicles. He also collects from literature 232 cases in which 119 had seminal vesicle involvement. Of his 31 cases, 11 were on one side and 20 were bilateral infections. Only 1 was diagnosticated clinically. The other 30 were found at autopsy. In 2 of these later there had been spontaneous cure.

These statistics show us that the disease is usually not confined to only one part of the uro-genital tract and also that only 3% of existing cases are sufficiently advanced to be detected by any usual examination of the patient. It also gives the significant fact that only 6% of all cases recover spontaneously. In fact, although the primary lesions are oftenest found in the epididymis, it is not long before the testicle, vas deferens, seminal vesicles, prostate and even the bladder and uretha become involved. From the bladder it is an easy step to the kidney. Sometimes a primary haemotogenous infection begins in the kidney and descends along the urinary passages until the entire uro-genital tract is involved.

When one considers the usually fatal outcome of genito-urinary tubercle and the pitiable picture presented by one in the later stages I think the following case a remarkable success:

Mr. H. K., 38 years old, single, consulted me in October, 1902, and gave the following history:

In 1893 Dr. Willy Mayer did left orchidectomy for tubercle of the epididymis. In 1894 Dr. Bolton Bangs did combined suprapubic and perineal currettage of the bladder for tubercle. Since then he has spent two years in Arizona and six years in New York. Has gained 10 pounds in weight. Feels well. Has had no symptoms for seven years. Wants to get married and so consults me. Cystoscopy shows a perfectly normal bladder except for scar tissue at the fundus where the suprapubic wound was and some small scars where ulcers were curretted. Physical examination of chest, abdomen, the other testicle and the prostate discovers no disease. Urine examination negative. I believe this man to be entirely well.

In order to show the reverse picture, I will recite the case of a man who came to me about the same time.

In 1903 Mr. X. consulted me. He said he was 45 years old but his general appearance was that of a much older man. Hair, although abundant, very gray. Skin showing an extreme anaemia. He walks stooping and aiding himself with a cane. Gait slow, shuffling, feeble. Dyspnoea on very slight exertion. Physical examination shows with both epididymes, cords, seminal vesicles and the prostate infiltrated with nodules. On one side of the scrotum is likely a discharging sinus, evidently connecting with the epididymis or the tunic. Bladder contracted (capacity only 40 c.c.). Urination very frequent. Great tenesmus after emptying bladder. Urine about one-half composed of foul-smelling, ropy mucus and pus. Many tubercle bacilli present. Chest examination shows dullness, rales and increased sounds at both apices, lower behind than in front. Abdominal palpation discovers enlargement of both kidneys.

In fact here we have a young man of forty-five in the last stages of widespread tubercular disease, which, so he told me, began as a small nodule in the right epididymis four years before. He had been under the care of a physician who gave him cod liver oil, fresh air, extra diet, etc., etc., but in spite of such measures his disease progressed constantly.

[Contrasting these two cases one is forced to see the evident triumph of surgical treatment in the first case and the evident failure of general hygienic measures in the other.] If, as stated above, only 6% of all cases, however slight the infection, recover spontaneously, this is what common sense might predict.

If, now in addition to the removal of all possible diseased tissue, nature is aided to cure after her own fashion by the administration of tuberculin, our results should show further improvement. This theory works out well in practice. I have operated upon a number of individuals and followed it up with tuberculin treatment afterward with very gratifying results.

After studying 50 cases, Berger [4] comes to the conclusion that if the conservative treatment does not seem to give good results in a short time, more radical measures should be undertaken. His patients were between 10 and 80 years of age. Tuberculous family history in 7 patients. Infection of other organs in 12 patients. The tuberculosis followed gonorrheal infection in 4 cases, in 9 its be-

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ginning was referred to an injury received 18 days to 11 months before evidence of the tubercle was apparent.

In regard to resection of the epididymis for tuberculosis. Bogoljuboff-Kasau [5] reports 166 cases from literature and 12 cases of his own. Reports healing of the tubercular process in the testicle after removal of the epididymis as a rule in all cases. In 22 cases of infection of both the testicle and epididymis where partial resection of the epididymis was practiced, healing resulted in 15. The disease appeared on the other side in 137 within an average time of 14 months. In 42 cases which were complicated by tuberculosis of the prostate and seminal vesicals, he resected the epididymis in 19, 15 of which were one sided and 4 double sided. He claims that cure of the tuberculosis of all organs resulted in 19 cases, but does not state how long after operation he was able to follow these cases.

Fuller [6] has performed seminal vesiculotomy for chronic gonorrheal infection of the seminal vesicles. He believes tuberculosis a contra-indication for operation. His statistics of the operation [7] showed 33 cases. No deaths.

From autopsy reports and also from my own clinical experience, I believe involvement of the entire genital tract to be much more frequent than is generally supposed to be the case. I, therefore, believe the former operation of resection of the epididymis entirely inadequate, as indeed the statistics above quoted would indicate. I also believe Fuller is right in advising against seminal vesiculectomy for seminal vesicle tubercular disease unless at the same time other infected organs are also removed.

I have, therefore, latterly practiced a very radical method of operation so as to extirpate as much tuberculous tissue as is practicable before placing the patient upon tuberculin treatment. I will report only my earlier cases to illustrate with what success the procedure had been attended up to the present time.

Y. A., 34 years old, single, was sent to me Feb. 15th, 1908. For two years he had suffered from frequent urination and gradually increasing pain in the bladder. Two months ago the right epididymis began to swell. Not painful. Now the testicle is involved in a large indurated mass the size of a goose egg. On the other side the scrotal integument is slightly reddened and a feeling of deep fluctuation is evident. Rectal examination shows the cord hard and as large as one's finger: Prostate contains nodules on the right and right seminal vesicle is indurated. Bladder capacity only 30 c.c. Tubercle bacilli in the urine. Dr. Yenney pronounced the lungs sound. Operation Feb. 24th at St. Vincent's Hospital. The right testicle removed through an incision extending into the inguinal region in the usual way. The cord was then freed from the surrounding tissues as far into the inguinal canal as possible, there it was clamped and cut off. Then the patient was placed in the lithotomy position and a semi-lunar incision, with its convexity anteriorly, was made extending between the tuber ischii. After dividing the central tendon of the perineum the rectum was pushed backward and by blunt dissection following the plane of the recto-vesical fascia, a deep pyramidal-shaped wound was made which gave easy access to the prostate and seminal vesicles. By pushing the finger up to the apex of this deep wound and by pushing downward on the forceps, which had been previously clamped to the cut end of the vas deferens in the inguinal canal, it was possible to push this clamp through into the perineal wound carrying the cord with it. By removing this anterior clamp and replacing it with another through the perineal wound, it was found possible to remove the entire spermatic cord with the seminal vesicle on the right side and the right lateral lobe of the prostate. It is important not to perform the prostatectomy first. Having thus excised all the tuberculous tissue which it was possible to reach, the anterior wound was closed without drainage and the perineal one was closed, leaving a small amount of gauze packing for drainage. The time of operation was almost three hours, owing chiefly to the difficulties attendant upon the removal of the seminal vesicles at the bottom of a deep wound. The patient was returned to bed in good condition, the gauze removed after 24 hours from the perineal wound. Convalescence was uninterrupted, the patient being up and about on the 10th day. On March 17th the patient was in good condition but complained that he still suffered from vesical tenesmus. He was given hypodermically 1-10,000 of a milligram of Koch's O. T. Serial dilution No. 1 as prepared by Mulford. The day after this injection the vesical symptoms were very much better. Frequency was less and pain relieved. On the 21st 1-5000 of a milligram was given with the corresponding good result. This was repeated on the 27th and 30th. By this time urination was much less frequent and the pain had entirely disappeared. The patient was then discharged from the hospital and went to Huntington, Oregon. There he came under the care of Dr. Spencer, who gave him two injections in the month of April, dosage not stated. In May, '08, the patient wrote to me saying that he felt well, had gained weight and was working in a sheep camp not far from Huntington, Oregon. Since he had not felt well enough to do any work for two years, the result was very gratifying.

In March, 1908, A. D., 28, single, consulted me and related the following history: August, 1907, contracted a gonorrhea. Treated by a doctor in Lewiston, Idaho. The discharge stopped in 6 weeks. In Jan., 1908, received a blow on the testicle. To this injury he refers the swelling of epididymis. Examination shows well developed and nourished man. Lungs, heart and abdomen negative. Right epididymis and testicle involved in a tumor almost the size of one's fist. Over the posterior aspect of this tumor the skin is reddened and a fluctuating spot toward the center of the hyperaemia area shows pus very near the surface. The spermatic cord, seminal vesicle and prostate involved on the right. Symptoms of bladder involvement very slight. No cystoscopic examination.

Urine, acid. Not much sediment. Small amount of pus. Tubercle bacilli not found. Operation March 12th, 1908. Technic similar to that described for last case. However, in this man the perineal part of the operation was much more difficult because his pelvic outlet was very narrow and the wound between the bladder and the rectum very deep. Also in this case venous hemorrhage was troublesome. After removal of the testicle with the cord and after removal of the strictures at the base of the bladder, it was found necessary to pack the perineal wound with gauze to stop the oozing. The tumor, after removal, was cut and the epididymis found to be merely a shell of thickened tissue forming the walls of an abscess. Other smaller abscesses were scattered through the tumor and in the seminal vesicle and portion of prostate removed. Time of operation three hours. Patient returned to bed in good condition; 48 hours later the gauze packing was removed from the perineal wound. The next day it was evident that injury, either at time of operation or from pressure of the gauze packing, had caused a fistula into the rectum. April 20th, five weeks after operation, patient left the hospital but the fistula in ano remained patent. April 10th the first tuberculin injection of 1-10,000 milligram. Koch's O. T. (Mulford) serial dilution No. 1 given. Patient not seen between May 1st and May 20th. Two injections given in May on the 20th and 27th. The last injection 1-5000 milligram tuberculin was given. This dose caused a rise of temperature and the usual signs of overdose. Consequently, I thought best to omit further injections until the fever had subsided. June 11th. The fistula in ano not having healed at all, the patient was given ether and the fistula cut through the sphincter into the rectum. July 30th. The wound of this second operation almost but not quite healed. Aug. 10th tuberculin injections resumed. 1-8000 milligram same solution given. Aug. 20th same. Sept. 1st 1-5000 milligram same. Note on this date is that the patient had gained 10 lbs. in weight, fistula entirely healed, feels strong and well. Is doing heavy, laboring work.

Oct. 5th has gained more weight. Same dose, same solution given without reaction or untoward result. Feels perfectly well. All demonstrable evidence of disease has disappeared.

March, '09. Examination shows no evidence of recurrence.

I believe these two cases of genito-urinary tubercle are well, or nearly so. Time alone can decide whether recurrence will follow. When we contrast the result after this very radical operation, and the administration of tuberculin, with the result of any equally advanced case treated with medicine or general hygienic measures, the difference in outcome is striking. On the one hand the patients have regained health and are well, on the other we so often see a broken down young man, suffering severely and awaiting death. The result is no better than in the first case related, which was operated by Dr. Bangs of New York, but I believe that was an exceptional case. However, it was this case that suggested to me that the very radical removal of all tuberculous tissue is advisable in order to give the patient a chance to overcome such infection as necessarily remains.

It is possible that tuberculin injections might suffice without preparatory operation, especially in the early cases. Indeed, in early cases I should advise trying it first but unless prompt improvement results more radical measures should be decided upon. These cases had advanced to abscess and it does not seem reasonable to expect the patient's organism to overcome such an infection by immunization methods alone.

The operation itself is a formidable and difficult one, but most of these sufferers are men otherwise sound and between 25 and 45 years of age. As yet I have had no fatal or even alarming results. I have operated, in all, twelve cases but the later ones are too recent to report at this time.

REFERENCES.

1. v. Frisch and Zeuckerkandle Handbuch d. Urologie, p. 502.
2. Virchow Archiv. Bd., 183 H. 1.
3. Beitrage z. Klin. d. Tuberkulose 1905 Bd. 111 H. 3.
4. Archives f. Klin. Chir. Bd. 68 H. IV.
5. Arch. f. Klin. Chir. 74 Bd. 11 H.
6. Medical News, Jan. 7th, 1905.
7. Post-Graduate Magazine, Oct., 1904.

Discussion.

Dr. G. H. Evans, San Francisco:

In the number of papers presented so many points have been brought out that it is impossible to cover very much ground in the small amount of time allotted for discussion. I will endeavor to merely call attention to, or emphasize, one or two points which have not been brought out very clearly. First of all, the question of the radical treatment of bladder tuberculosis. It seems to me that we are in danger of losing sight of the fact that bladder tuberculosis is usually a descending process hematogenous in origin. If this is the case, then it seems to me from analogy we must recognize the fact that in order to cure a bladder tuberculosis, if the primary lesion can first be determined and removed, we have in such procedure the most logical means of a cure. I say this not giving up one iota of my enthusiasm for tuberculin therapy. The results achieved by surgeons where the focus is confined to one kidney will substantiate this statement. It is a fact, however, that the vast majority of bladder tuberculosis cases are cases where we cannot isolate and determine the primary focus, or where more than one kidney is involved, and it is here where we have a descending process, where both kidneys are involved as well, that our hope lies in the administration of tuberculin along with hygienic procedures. I do not believe that any surgical procedure applied to the bladder itself can be expected to be productive of anything but palliative measures. Dr. Pottenger has given us a comprehensive view of the theory of tuberculin immunity. He has done it in a way that seems to me can make it clear to any one the way tuberculins act. I am sorry, however, that Dr. Pottenger did not go a little further into the question of tuberculin dosage. It is here that the great danger lies. It is here that too many failures are recorded and even to-day it is here that tuberculin is being discredited because of the lack of thought and care taken in the matter of dosage, time of administra-

tion and proper selection of the tuberculin. I have seen harm derived from too large doses of tuberculin. I believe it is a safe rule in applying tuberculin therapy in diseases of the urinary system to establish a small maximum dosage and never under any circumstances exceed the amount. I believe that if Prof. Wright's work has done any good at all it has been because of the fact that he has shown the value of a maximum dosage that is far below the minimum amount used previously.

Dr. A. B. Grosse, San Francisco: I am in accord with the principles laid down by Dr. McConnell with one exception, and that is that in cases of tuberculosis of the kidney with a descending infection and a beginning bladder tuberculosis, I maintain that the kidney should be immediately removed and the bladder symptoms will very quickly subside. As to the use of the tuberculins, I have not had sufficient results to cite anything. The question of vaccines in the treatment of urinary diseases is of tremendous interest. I have taken this occasion to rise immediately after Dr. Reinhardt in order to give you the other side of the question. My work in vaccines has been done with the assistance of Dr. Ryfkogel, and we have been very careful in their preparations, but in spite of the care taken we have had some of our vaccines fail us. Our vaccines sometimes become inocuous in a very brief time and the patients will then not improve under them. The mental effect cannot be taken into consideration. The patients do yield frequently to the stock vaccines although by no means as readily as to the fresh autogenous vaccines. With gonorrhoeal infections my experience has been practically only with the stock vaccines. In the treatment of acute gonorrhoea I find that the doses must be tremendously small, just approaching a slight reaction. In mild or chronic cases a larger dose can be given. Another thing, the local treatment of the gonorrhoea must cause an inflammatory condition, that is, a flow of blood to the part rich in opsonins. For instance, in gonorrhoeal prostatic trouble massage will bring blood, without the massage we will get no reaction and no results. I have had some of the most wonderful results in the use of the streptococcus vaccines, particularly in the bladder and urethral cases. One case, a man of 80 years of age, had an infected bladder and went from bad to worse. I made a culture and obtained a pure culture of colon bacillus. I then gave him the vaccine treatment and stopped all internal medication. The man became perfectly normal under this treatment. About the middle of December he became worse again and the vaccines did not do any good. In January I made cultures and found streptococcus besides the coli infection. The man was looking very badly and urinating about every 15 minutes, and that evening after injection of streptococci vaccine, he did not urinate for five hours.

Dr. J. J. Hogan, Vallejo, Calif.: I have had very little experience with the treatment of urinary tuberculosis with vaccines, but going back for a period of two years I have had experience with other infections of the urinary tract, and think that there is one point to be brought out, and that is the question of accurate diagnosis. For the past two years I have stained a centrifuged specimen of every urine coming to me, and have made my diagnosis with the help of this method, where otherwise the cause of the trouble would have been overlooked. Patients coming in with a diagnosis of acute nephritis have turned out in many instances to be infections of different types. Another point to be made is the dosage and I think that at the present time we are only on the threshold of this work. On the 17th of last month I took a blood culture of a case of phlebitis which had been running a clinical typhoid for a month. He had been running a temperature with a leucocytosis and the man was not doing well, the temperature varying from 102 to 104. A pure culture of staphylococcus aureus was obtained. An autogenous vaccine was made which contained 300 million to the c.c. and the directions were that 1/3 c.c. was to be given. By mistake his attendant gave 1/3 of the whole amount of vaccine sent, which contained 1,500,000,000 or fifteen times the dose. The temperature dropped within a few hours and remained subnormal for 36 hours with general improvement. Within a few days they gave him another dose of 150,000,000, and on the following day another dose, and the temperature dropped and did not rise again. This case demonstrates a point that is borne out, by my experience, that large doses of the staphylococcus must be given in some cases in order to get results.

Dr. R. L. Rigdon, San Francisco: If we are not on our guard we will find ourselves growing into the habit of treating these cases of tuberculosis with vaccines simply because it is the up-to-date thing to do, and then, too, it is so easy to give a hypodermic injection, and these poor patients are so eager to grasp at any straw that may point toward the road to recovery. It is not at all sufficient that a diagnosis of urinary tuberculosis be made but the definite localization of the lesion or lesions must be insisted upon, and if the kidneys are involved the functional capacity of each must be determined. Not seldom both kidneys will be found the seat of pathologic changes, but the capacity of each may be functionally sufficient. Manifestly surgical interference with a nephrectomy in view could not be expected under such circumstances. But, perhaps while both kidneys are involved, one organ has been almost wholly destroyed and is functionally a negligable quantity while the sister organ may be only moderately invaded by the tubercular process and have ample functional capacity. To leave the badly crippled kidney in place and permit it to continue by its poisonous secretions or products to overload the system with toxins and thus put double work of elimination upon the already suffering sister organ would be bad practice. Common sense and experience alike counsel the removal of the incapacitated kidney by surgical means. We must not permit the promising and alluring field of vaccine therapeutics to interfere with the thoroughness with which we investigate our cases.

Dr. G. S. Whiteside, Portland, closing discussion: It is extremely important in operating that the tuberculous material should not be broken but removed as rapidly as possible from the wound, and it is important also that the vas deferans should be removed as completely as possible. If these things are done the result will be as in the case I reported, where, after the operation, the man received tuberculin treatment for a time and within two months after the operation he was in eastern Oregon riding on a sheep ranch. For two years before he had been incapacitated for business life and two months after operation and after a short course of treatment with tuberculin, he was able to ride horses on a sheep ranch.

Dr. F. M. Pottenger, Monrovia, closing discussion: With regard to the removal of the diseased kidney I will say that I do not think one kidney should be removed without a catheterized specimen from the other kidney. Tuberculosis of the kidney is not always active. We might have a left kidney involved and have the right kidney show nothing upon catheterization at the same time, and then the next week we might get the tubercle bacilli from both sides. This is characteristic of tuberculosis. The vaccine therapy for tuberculosis, in the hands of a careful man, will bring good results—if it is used intelligently the results will be good.